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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,735	09/29/2005	Guillermo J. Tearney	036217/US/2-475387-00191	6550

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250 PARK AVENUE
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EXAMINER

TURNER, SAMUEL A

ART UNIT	PAPER NUMBER
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2877

MAIL DATE	DELIVERY MODE
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07/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,735	Applicant(s) TEARNEY ET AL.	
	Examiner SAMUEL A. TURNER	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-15,18-20,23,24 and 27-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,4,6-11,23,24 and 27-36 is/are allowed.
- 6) ☒ Claim(s) 12-15, and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 March 2008 has been entered.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 limits the refractive index of BK-7 glass with a range of 1.51 to about 3.5. This range is confusing because BK-7 glass has a refractive index of 1.518. The additional range values claimed for BK-7 are confusing.

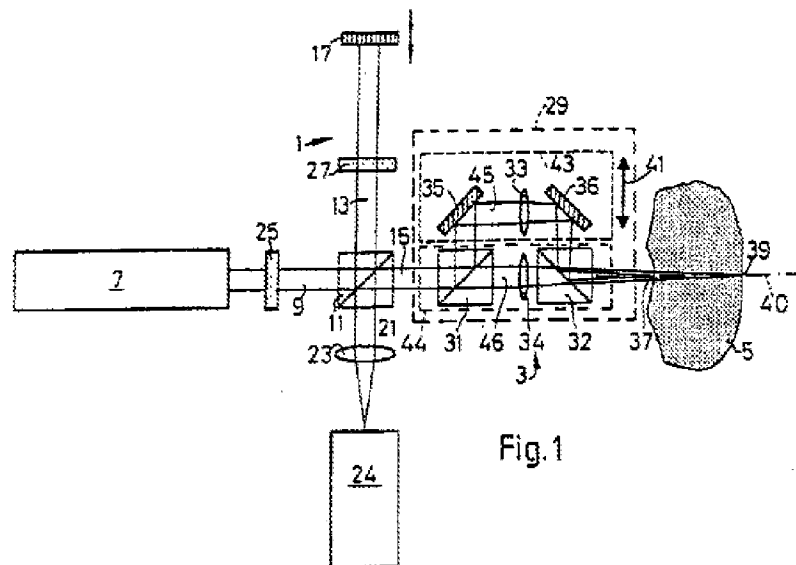
Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12 and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Waelti et al(WO 01/38820).



With regard to claim 12, Waelti et al teach an apparatus for irradiating a sample(Fig. 1), comprising:

- a) an interferometer forwarding an electromagnetic radiation(Fig. 1); and
- b) a sample arm receiving the electromagnetic radiation(Fig. 1, 3),

the sample arm including an arrangement which is configured to produce at least two radiations from the electromagnetic radiation so as to irradiate the sample(Fig. 1, 29), and

to delay a first radiation of the at least two radiations with respect to a second radiation of the at least two radiations, wherein the delay of a path of the first radiation compared to a path of the second radiation is at least about 500µm in air(column 3, lines 37-42).

As to claim 13/12, Waelti et al teach wherein the delay of the path of the first radiation compared to the path of the second radiation is at least about 1 mm in air (column 3, lines 37-42).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 15, and 18-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Waelti et al(WO 01/38820).

With regard to claim 14, Waelti et al teach an apparatus for irradiating a sample(Fig. 1), comprising:

- a) an interferometer forwarding an electromagnetic radiation(Fig. 1); and
- b) a sample arm receiving the electromagnetic radiation(Fig. 1, 3),

the sample arm including an arrangement which is configured to produce at least two radiations from the electromagnetic radiation so as to irradiate the sample(Fig. 1, 29), and

to delay a first radiation of the at least two radiations with respect to a second radiation of the at least two radiations(column 3, lines 37-42).

Waelti et al **fail to teach** wherein the arrangement has at least one of: a first optical section with a refractive index of at least 1.5, the first section being structured to propagate the at least two radiations, a second section which has silicon, the second section being structured to propagate the at least two radiations.

As to claim 15/14, Waelti et al **fail to teach** wherein the refractive index of the optical section is at least 3.0.

As to claim 18/14, Waelti et al **fail to teach** wherein at least one of the first section or the second section comprises an anti-reflection-coated BK 7 glass.

As to claim 19/18, Waelti et al **fail to teach** wherein the glass has a thickness of from about 1.6 mm to about 7.7 mm.

As to claim 20/18, Waelti et al **fail to teach** wherein the glass has a refractive index of from about 1.51 to about 3.5.

CLAIMS 14 and 15:

Official notice is taken that optical elements, such as polarizing beam-splitters are commonly made of silicon with a refractive index of 4.09 or BK 7 glass with a refractive index of 1.518. See In re Malcom, 1942 C.D 589; 543 O.G. 440.

If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the next Office action will indicate that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate.

Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b).

With regard to claims 14 and 15, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use commonly available polarizing beam-splitters as the polarizing beam-splitters 31 and 32 in the delay 29 of Waelti et al. Waelti et al meets the limitations of claims 14 and 15 because the polarizing beam-splitters 31 and 32 propagate both sample beams. While Waelti et al fails to define a specific polarizing beam-splitter material, one of

ordinary skill in the art would have recognized that the use of commonly available optical elements would reduce manufacturing cost.

CLAIMS 18 and 20:

Official notice is taken that anti-reflection coatings are commonly used on optical elements in an interferometer to substantially reduce unwanted reflections. See In re Malcom, 1942 C.D 589; 543 O.G. 440.

With regard to claims 18 and 20, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Waelti et al by placing anti-reflection coatings on the polarizing beam-splitters 31 and 32.

The motivation for this modification would have been to eliminate any unwanted reflections from the polarizing beam-splitter surfaces which can lead to unwanted interferences at the detector or additional reflected light on the detector not originating from the sample. Both of which will reduce the sign-to-noise ratio.

CLAIM 19:

Official notice is taken that the size and mass of cube polarizing beam-splitters is dependent on cost. A size for cube polarizing beam-splitters is 5 mm, and 3 mm cubes are also available. See In re Malcom, 1942 C.D 589; 543 O.G. 440.

With regard to claim 19, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use small optical components in order to reduce the size and weight of an interferometer. While Waelti et al is silent on the size of the polarizing beam-splitters 31 and 32, one of ordinary skill in the art would

have recognized that using a commonly available cube polarizing beam-splitter size, 3-5 mm, would reduce manufacturing cost and the interferometer size. Rurther, the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, In Gardner v. TEC Systems, Inc., 725 F.2d 1338.

Response to Arguments

Applicant's amendment has overcome the rejection of claims 4, 12-20, 28-31, and 33-35 under 35 U.S.C. § 112, second paragraph.

Applicant's arguments with respect to the rejection of claims 12-15, and 18-20 under Knüttel have been considered and are persuasive, see pages 15-19 of Applicant's remarks.

Applicant's arguments with respect to the rejection of claims 12-14 under Li have been considered and are persuasive, see pages 19 and 20 of Applicant's remarks.

Applicant's arguments with respect to the rejection of claim 32 under Waelti et al have been considered and are persuasive, see pages 23-26 of Applicant's remarks.

Waelti et al

Applicant's arguments with respect to the rejection of claims 12 and 13 under 35 U.S.C. § 102(b) as anticipated by Waelti et al have been considered and are not persuasive, see pages 19 and 20 of Applicant's remarks. On reconsideration of the Waelti et al reference, the examiner discovered that a range of 34 mm is given, see column 3, lines 37-42.

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cross(4,890,901), see column 2, line 59; Tan et al(4,909,631), see column 10, line 4; Yoshida et al(5,085,496), see figure 24(a); Lee(5,121,983), see column 4, lines 5-6; Itoh(5,635,830), see column 1, lines 52-54; and Frigo et al (6,445,485), see column 8, lines 1-2.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Samuel A. Turner/
Primary Examiner
Art Unit 2877